May 6, 2003

TO: Internal File

THRU: Peter Hess, Environmental Scientist III/Engineering, Team Lead

FROM: Jerriann Ernstsen, Environmental Scientist/Biology

RE: Methane Degas, Canyon Fuel Company, LLC., Dugout Canyon, C/007/039-03B

SUMMARY:

The Division received an amendment to address the drilling of two methane degasification wells at the Dugout Canyon Mine on March 7, 2003. This memo reviews the biology section of the amendment.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

John Senulis of SENCO-PHENIX directed the cultural resource survey (Attachment 4-1). The crew consisted of Jeanne Senulis and Cathy Dodt-Ellis. The attachment does not provide qualifications of the surveyors (R645-301-132).

Mr. Mel Coonrod (Silviculturist and Zoologist) and Mr. David Steed (Ecologist) of Environmental and Engineering Consulting project leads for the vegetation inventory (Attachment 3-1). The attachment states that Mr. M. Dean Stacy also participated.

Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the threatened, endangered, and sensitive species inventory report (Attachment 3-2; as shown on field data sheets, only). The attachment states that Mr. M. Dean Stacy also participated.

JBR Environmental Consultants conducted the bat survey (pg. 3; sec. 322.200). The attachment does not provide names or qualifications of the surveyors (R645-301-132), or the survey report (R645-301-131).

DWR conducted the raptor survey. The attachment does not provide surveyor names (R645-301-132) or the survey report (R645-301-131).

Findings

The information provided is not adequate for the reporting of technical data requirements of the regulations. Prior to approval, the Permittee must:

R645-301-131, Provide the all required information for the **1)** Raptor survey and **2)** Bat survey.

R645-301-132, Provide the names or qualifications of the principle investigator(s) leading the **1)** Cultural resource survey, **2)** Bat survey, and **3)** Raptor survey (names).

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

Much of the information concerning the mine permit area resources are provided in the MRP. The Permittee provides supplemental information specifically concerning areas for the degassing wells in this amendment.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

SENCO-PHENIX conducted the cultural resource survey above Fish Creek and Soldier Creek drainages on July 8, 2002 (Attachment 4-1). The survey was conducted on seven of the

eight proposed drill holes and connecting access roads. MW-2 drill hole had been previously surveyed. The survey results of the seven show no historic or archeological resources located within the project area. This contractor recommends a finding of no effect without stipulations.

The surveyors conducted a Class III intensive walkover. John Senulis directed the crew: Jeanne Senulis and Cathy Dodt-Ellis. The survey consisted of meandering transects spaced no further than 15 meters. The drill holes and access roads were given buffer zones of three and thirty meter acres, respectively.

The Permittee agrees to inform all personnel to refrain from collecting or disturbing cultural resources in the area. Furthermore, the Permittee will notify officials if cultural resources are identified during operations or reclamation work.

Findings

The information provided for the development of drill hole sites MW-6 and MW-8 is adequate to meet the minimum of the Historical and Archeological Resource Information regulations.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

In brief, the Division highly recommends that the Permittee conduct a new vegetation survey. The paragraphs below include specific concerns relating to the current survey.

Mr. Mel Coonrod (Silviculturist and Zoologist) and Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the vegetation inventory on June 4, 2002 (Attachment 3-1). The survey crew surveyed 15 transects for the proposed eight wells. Each transect spanned 100 feet and was inventoried on ten-foot intervals. The amendment states that there were a total 100 sampling points per transect, but the derivation of the number is unclear. The report does not specify the actual survey methods used. Future surveyors should know the methods used previously in order to select the best-fit evaluation method. Identify the type of vegetation survey method used (R645-301-356.110). The specific sampling method used must follow the Division's guidelines.

The Permittee plans to assign reference areas for the degasification wells before drilling, during the 2003 growing season. The Permittee must receive Division's approval of reference areas for each vegetation type as described in the Division's guidelines. The Permittee must also provide a vegetation inventory for the reference area, evaluate vegetation status, and show

sample adequacy as described in the Division's guidelines. Also, show on a map the vegetation community type, location, and dimensions of reference area(s). The Permittee must provide productivity measurements as weight per unit area for the reference area once selected. The Permittee may choose to have NRCS provide the productivity survey or follow other related Division guidelines (R645-301-321).

Attachment 3-1 provides a summary table of the species surveyed for each transect near the proposed drill wells. An accompanying map provides the location of survey transects and drill wells. The transect numbers in association with the drill wells do not consistently agree with the transect numbers on the map. For example, for MW-8 the associated transect number on the table and map are 5 and 4, respectively. Similar inconsistencies exist for MW-1, -3, and -5. Clarify these inconsistencies between the map and table (R645-301-121.200).

The survey for MW-6 showed that the herbaceous and woody species percentage cover equaled 15 and 20, respectively. Oregon grape and wheatgrass (sp.) were the primary contributing herbaceous species. Wild rose was the primary contributing wood species. Twenty-seven percent of the cover came from litter and rock, and 38 percent is bare ground. *Because of the inconsistency between Table 1 and the map, mentioned above, this type of summary cannot be made for MW-8.*

The attachment also provides the productivity values and overstory percentage for each transect ("Findings"). The crew derived canopy cover values from ocular estimations. The values are reported as follows:

Well	Productivity (pounds per acre)	Overstory (percentage)
MW-6	100	10 (Spruce/Fir)
MW-8	300	0

The species contributing to the overstory percentage values are confusing when considering the species and values summarized on Table 1. For MW-6, the tree/shrub listed on Table 1 are snowberry and rose, yet the species contributing to the overstory percentage values are from spruce and fir. *Because of the inconsistency between Table 1 and the map, mentioned above, this type of comparison cannot be made for MW-8.* Even if these inconsistencies are corrected, the Permittee must follow Division's guidelines for measuring productivity (R645-301-321).

Additional problems of the vegetation survey include:

- Lack of identification to the species level for many plants surveyed.
- Missing plant productivity values for the well sites.
- Missing vegetation community types for the well sites.

Furthermore, these survey items are also required for reference areas (R645-301-321).

Findings

The information provided is not adequate for the reporting of vegetation resource requirements of the regulations. The Division highly recommends that the Permittee conduct a new vegetation survey. Below are the findings relating to the current survey, which the Permittee must:

R645-301-356.110, Provide the type of the vegetation survey methods used. The specific sampling method used must follow the Division's guidelines.

R645-301-121.200, Clarify **#1)** inconsistencies described above concerning Attachment 3-1 and Figure 1 (map) and Table 1, and **#2)** inconsistencies between species listed in Table 1 and overstory percentage values provided in the "Findings" section.

R645-301-321, **1)** Work with the Division to select appropriate reference area(s). Provide vegetation inventory, evaluate vegetation status, and show sample adequacy for the reference area(s). **2)** Provide productivity surveys for the well sites and the reference area(s). The Permittee must follow Division's guidelines, which includes the recommendation for NRCS to conduct the survey. 3) Provide for the well sites and reference areas: **a)** Plant identification to the species level, **b)** Plant productivity values, and **c)** Vegetation community types.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

In brief, the Division highly recommends that the Permittee conduct a new threatened and endangered species (TE) survey. The paragraphs below include specific concerns relating to the current survey.

Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the threatened, endangered, and sensitive species inventory on May 10, 2002 (Attachment 3-2). The TE survey was not comprehensive and included surveys for TE species not listed for Carbon county. The survey crew surveyed for twenty-seven plant and two animal species. These species are included on federal threatened and endangered (TE) list for Carbon and Emery counties or on sensitive list for the area. Although the Permittee conducted surveys of many TE and sensitive species, the Permittee must conduct site-specific occurrence surveys during appropriate seasons of the year and provide impact assessments for all TE species (R645-301-322).

For the sites evaluated for TE species, including MW–6 and MW–8, the surveyors noted "no observation" for all species surveyed. The survey, however, shows suitable habitat for the Last chance townsendia (*Townsendia aprica*), Tufted cryptantha (*Cryptantha caespitosa*), Canyon sweetvetch (*Hedysarum occidentale* var. *canone*), Helenium hymenoxys (*Hymenoxys helenioides*), Bicknell milkvetch (*Astragalus consobrinus*), Basalt milkvetch (*Astragalus subcinereus*), and Sedge fescue (*Festuca dasyclada*). The Permittee must resurvey for these TE and sensitive species during appropriate seasons of the year prior to disturbance (R645-301-322).

The Permittee provides *Final Report: Assessing the impact of scale on the performance of GIS habitat models for Mexican Spotted Owl* (MSO), David W. Willey, October 22, 2002 (Attachment 3-3). The report summarizes the study that evaluated the performance of the 1997 and 2000 models developed by Dr. Willey et. al. for predicting MSO habitat. The study included four project areas near Price including the Pine Creek area north of the Dugout Canyon Mine permit area.

To date, the MRP does not apparently include an assessment for the Mexican Spotted Owl (MSO) specifically for the Dugout mine permit area. The Permittee must assess for MSO habitat within a half-mile radius of the mine permit area using the 1997 or 2000 model. If the model predicts possible MSO habitat, the Permittee must contact the Division before drilling. The MRP must include the results of the MSO modeling (R301-322.100).

DWR conducted the raptor survey in 2002. The amendment does not provide the survey report (refer to Finding R645-301-131), but provides a map of the overflight, albeit indistinguishable. The amendment states that the 2002 survey results showed three inactive golden eagle nests within sections 16 and 22 (pg.3-2). Because the amendment does not provide a clear map of the overflight, it is difficult to assess possible impact from mining to these nests. The Permittee must present raptor information clearly and correctly. Provide a map (recommended size is one inch equals 400 feet) showing locations of raptor nests and drill holes as well as the boundary lines of the mine permit area (R645-301-323.400; -322.100).

The Permittee must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Effects must be addressed by calculating the amount of water used by the mine. Consumption estimates should include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if the loss is estimated to be greater than 100 acre-feet per year (R645-301-322; -333).

JBR Environmental Consultants conducted the bat survey in June 2002 (pg. 3; sec. 322.200). The attachment does not provide the survey report (refer to Finding R645-301-131). The amendment states that the 2002 survey results showed bats in the area, but none were TE species (pg. 3-3).

Findings

The information provided is not adequate for the reporting of fish and wildlife resource requirements of the regulations. The Division highly recommends that the Permittee conduct a new TE survey. Below are the findings relating to the current survey, which the Permittee must:

R645-301-322, **1)** Conduct site-specific occurrence surveys during appropriate seasons of the year and provide impact assessments for all TE species. **2)** Resurvey for the TE and sensitive species, declared to have suitable habitat, during appropriate seasons of the year prior to disturbance. **3)** Assess for MSO habitat within a half-mile radius of the mine permit area and include results in the MRP. **4)** Assess possible adverse effects of mine water consumption to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Follow requirements provided above.

R645-301-323.400, Provide a map showing locations of raptor nests and drill holes as well as a well the boundary lines of the mine permit area.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

The application must include the location and boundary of reference area(s) on a map (R645-301-323.100).

Findings:

The information provided is not adequate for the reporting of map resource requirements of the regulations. Prior to approval, the Permittee must:

R645-301-323.100, Provide location and boundary of reference area(s) on a map.

OPERATION PLAN

Analysis:

Most of the information concerning the operation plan is provided in the MRP. The Permittee provides little supplemental information specifically concerning areas for the degassing wells in this amendment.

Findings:

The information provided is adequate for the reporting of the Operation Plan of the regulations.

RECLAMATION PLAN

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The Permittee plans to collect and stockpile plant debris and rocks prior to soil removal (pg. 7, sec. 342). The goal for these stockpiles is to protect wildlife and provide habitat. It is unclear the intended future for these stockpiles during and after reclamation (R645-301-121.200).

Findings:

The information provided is not adequate for the reporting of Fish and Wildlife requirements of the Reclamation regulations. Prior to approval, the Permittee must:

R645-301-121.200, Provide a brief description for the long-term plan for the plant and rock debris stockpiles in the reclamation section of this amendment.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: General Requirements

The Permittee plans to reclaim the disturbed areas in two phases, which includes the following:

1. Phase I: Contemporaneous Reclamation. Apply final reclamation procedures to site-specific areas no longer needed for operations.
   - Grade.
   - Rip to 18-24".
   - Apply topsoil and leave in roughened state.
   - Mulch at a rate of 2,000 pounds per acre and anchor with tackifier.
   - Apply the final seed mix.
2. Phase II: Final Reclamation. Apply final reclamation procedures to the remaining disturbed areas no longer needed for operations.
   - Plug the wells.
   - Prepare the site.
   - Plant as above.
   - Fence the areas until bond release.

The seed mix is the same for both Phase I and II. The Permittee agrees to hydroseed at a final rate of 112 pure live seed per square foot. Application of seed will include mulch. The sites will also receive 500 transplants per acre (pg. 9, sec.352). The species and planting rates are the following:

Species	**PLS/sq.ft.**
Blue grama	33
Needle and thread	3
Palmer penstemon	14
Sanberg bluegrass	25
Western wheatgrass	8
Wyoming big sage	29
TOTAL	112
	Transplants/acre
Snowberry	125
Woods rose	125
Oregon grape	125

Current	125
TOTAL	500

Revegetation: Timing

Chapter 5 of the amendment provides an overview of the reclamation timetable. The Permittee plans to hydroseed in the fall. The seed mix contains Blue grama, which is a species that uses the C4 photosynthetic pathway. Application of this species should include a separate planting during the monsoon season, possibly later July or early August (R645-301-333). To make this seeding more efficient, the Permittee may want to add another C4 species to the list.

Revegetation: Standards For Success

The Permittee plans to develop a final plan for success standards before drilling and following the selection of the reference area. The amendment states that the plan will follow the Division's guidelines for sampling techniques, statistical methods, and post-land use parameters.

Findings:

The information provided is not adequate for the reporting of Revegetation requirements of the Reclamation regulations. The Division submits one finding and one stipulation. For the stipulation, the Permittee must submit the final plan for the success standards before drilling and following the selection of the reference area. For the finding, the Permittee must:

R645-301-333, Include a separate planting for the C4 plant species, during the monsoon season.

RECOMMENDATIONS:

Do not approve the application until all deficiencies have been addressed.